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ABSTRACT

This edition of Research Brief examined the impact of five specific academic support programs at Indiana University-Purdue University Indianapolis on college student performance and persistence: ARCHE, a tracking and monitoring system for at-risk students; Student MAP was developed to assist students who place in the lowest level reading remediation class; Learning Communities, which links a first-year experience course with an entry-level discipline course; Horizons Workshops, which gives poorly performing students a second chance; and student mentoring, in which groups of students collaborate with a trained student mentor. The study found that: (1) students in ARCHE performed at levels similar to those not participating in the program; (2) the Student MAP program appears to have increased the performance of all students placed in the program; (3) the Learning Communities program, which has evolved considerably over several years, shows signs of having a positive impact on student performance and persistence; (4) the Horizons Workshops have had a dramatic effect on retention, but the program does not appear to have affected grade performance in any significant way; and (5) the student mentoring program has had the most impact on students, raising student performance by as much as one-half a grade on average and increasing student retention by as much as 15 percent. (MDM)

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Research Brief

The Impact of Academic Support Programs on Student Performance and Persistence

February, 1997 Indiana University-Purdue University Indianapolis Vol. 4 No. 4

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Research Brief

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Introduction

IUPUI has made a strong commitment over its history to serve the Central Indiana community by making available the most comprehensive range of degree programs in the state to individuals of diverse demographic and academic backgrounds. The campus has maintained an "open-access" admissions policy, while at the same time maintaining high standards for classroom performance and student progress. The balance between these two critical aspects of the mission—open access and high academic standards—may sometimes make the campus appear less than stellar in its performance according to such traditional measures as student retention. On the other hand, the fact that many students who were not eligible to enter any other public college or university in Indiana graduate alongside peers who started college with far greater academic and social advantage attests to the importance of providing these opportunities to the community.

As part of its commitment to diverse learners, IUPUI has developed an array of academic support programs to provide all students the best chance of succeeding. Many of these programs have been organized and administered through the Undergraduate Education Center (UEC). Now, as IUPUI prepares to evolve these program and services to their next level as the University College, it is important to consider the impact of these programs on the students who participate. This edition of *Research Brief* explores the impact of five specific academic support programs—ARCHE, Student MAP, Learning Communities, Horizons, and Student Mentoring—on student performance and persistence. Future studies will include Academic Aerobics, and Square One along with other initiatives.

Method

Each of the five academic support programs is analyzed separately but follows a common format. This format begins with a description of the program, including its program content and target audience. This is followed by a description of the method used to identify one or more comparison groups of "untreated" students, and a statistical profile of both the target and comparison groups in terms of background, enrollment, performance and persistence indicators.

HIGHLIGHTS

This edition of *Research Briefs* examines the impact of five specific academic support programs on student performance and persistence. These five programs—ARCHE, Student MAP, Learning Communities, Horizons, and Student Mentoring—are among those being incorporated into University College.

The **ARCHE** program, a tracking system for monitoring many of IUPUI's "at-risk" students, has demonstrated that although IUPUI has admitted larger numbers of under-prepared students over the last few years, these students are performing at similar levels to their earlier counterparts.

The **Student MAP** program was developed to assist a subset of students who place into the lowest level reading remediation class (X150). Since its inception, it appears that all students placed into X150 have performed increasingly better on average.

The **Learning Communities** program has evolved considerably over the past two years, most notably by its recent linkage to the first-year experience course. These changes make it difficult to assess the program's impact on students. The most recent version, implemented in Fall 1996, shows signs of having a positive impact on student performance and persistence, but it is too early to reach any firm conclusions.

Horizons Workshops provide minimal support to poorly performing students to give them a second chance to improve their academic performance. The program has a dramatic effect on retention, partly because students are provided another chance as opposed to being dismissed, but it does not appear to affect grade performance in any significant way.

The **Student Mentoring Program** is the largest of the programs evaluated in this study and has the most impressive effect on student performance and persistence. It is responsible for raising student performance by as much as one-half a grade (0.50 GPA) on average, and increasing student retention by as much as 15 percent. It also enhances students' satisfaction with their social experiences at IUPUI primarily through studying with other students outside class.

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Since it is infeasible to derive completely matched samples, a second phase of analysis statistically controls for remaining differences between target and comparison groups that may otherwise explain differences in performance and persistence. Linear and logistic regression with block entry of predictors, and analysis of covariance were the primary statistical techniques used to factor out remaining differences. In addition, comparisons are made between specific matched subgroups among target and comparison samples. Finally, for the larger programs included in this analysis, differences in student satisfaction are examined using student responses from the Spring 1996 Continuing Student Satisfaction and Priorities Survey.

The background, enrollment, performance, and persistence indicators employed in this study vary among the programs due to timing issues, differences in group composition, and availability of data. Appendix 1 summarizes these indicators, including the statistical test used for assessing baseline group differences, and the programs to which each indicator was applied.

Results

The ARCHE Program

The ARCHE program was established in Spring 1994 as a tracking system for monitoring the academic progress of "at-risk" students in the UEC preparatory program. The program is not an intervention, *per se*, but rather a monitoring function to establish a baseline for assessing the effects of intervention programs such as the Student MAP and Learning Communities programs included in this evaluation study. The program was created to ensure accurate data were available for comparing to other student populations. The ARCHE tracking program isolates a research sample composed of students who place into a remedial reading course (X150 or X152) from among all freshmen UEC preparatory program new admits who have no transfer hours.

Baseline Group Comparisons

This analysis begins with the ARCHE program to examine more closely the baseline population for subsequent interventions. In addition, a comparison group was identified as students fitting the ARCHE profile who

Table 1. Baseline Comparisons for the ARCHE Program

Background and Enrollment Characteristics

	Fall 1995 Participants			*Fall 1996 Participants*			*Fall 93 Comp. Group*	
	Indicator	*n*[1]	*sig*[2]	*Indicator*	*n*[1]	*sig*[2]	*Indicator*	*n*[1]
Avg. Age	19.4	*378*	***	19.5	*527*	***	20.4	*511*
Percent Female	54%	*378*	*	61%	*527*		61%	*511*
Percent Afric. Amer.	20%	*378*	***	26%	*527*	***	12%	*511*
Avg. HS % Class Rank	36.6	*334*		38.9	*459*		37.2	*453*
Placed into Rem Math	91%	*378*		92%	*527*	***[3]	89%	*509*
Placed into Rem Writing	75%	*377*	***	55%	*512*		53%	*505*
Placed into Rem Reading	100%	*378*	[4]	100%	*527*	[4]	100%	*511*
Avg. Semester Hours	10.6	*378*	***	10.5	*527*	***	9.7	*511*
Performance and Persistence - Unadjusted								
Sem GPA	1.82	*344*		1.95	*509*		1.91	*458*
ENG W001	2.12	*146*		2.12	*209*		2.35	*187*
ENG W131	2.11	*56*		2.18	*123*		2.05	*129*
MATH M010	1.60	*87*		1.53	*49*		1.56	*106*
MATH 001	1.97	*168*		1.78	*304*		1.77	*180*
MATH 111	1.33	*24*	***	2.05	*38*	*	2.66	*36*
PSY B104	2.44	*44*	*	1.64	*34*		1.79	*42*
Retn to next sem	72%	*378*		76%	*527*		71%	*511*
Retn to next year	52%	*378*		na[5]	-		50%	*511*

[1]Valid n (excluding missing values) upon which indicator is based.

[2]See Appendix 1 for details on the statistical tests used to assess group differences.

[3]The difference relates not to the percent requiring remediation overall, but to the percent placed in 001 vs. M010: 39% of the comparison group placed into M010 compared to only 7% of the participant group

[4]Placement in a remedial reading course was an eligibility requirement for the program and comparison group.

[5]The one year retention rate for the Fall 1996 cohort cannot be determined until Fall 1997.

*p< .05; **p< .01; ***p< .001

began in Fall 1993, before the program was established. Although ARCHE students receive no direct intervention, many of the students tracked through this program participated in such interventions as Student MAP and Learning Communities. Therefore the comparison establishes a baseline for later subgroup comparisons among participants in these other programs.

Table 1 displays the baseline background, enrollment, performance and persistance indicators for the Fall 1995 and Fall 1996 ARCHE cohorts in comparison with Fall 1993 students who met the same eligibility criteria. Despite using the same criteria, there are several notable differences between the ARCHE and comparison groups. Specifically, both ARCHE cohorts contain higher percentages of African American students, nearly double the rate among the Fall 1993 comparison group. Furthermore, ARCHE students are younger and have higher average credit hours in their first semester. These two trends follow an overall changing pattern in the IUPUI undergraduate student body over the past three years.

Table 2. Effect of Program Participation on Semester GPA when Controlling for Other Predictors of GPA

	Unstandardized Coefficients			
	Beta	*Std. Error*	*t-value*	*Sig. Level*
(Constant)	0.401	0.349	1.15	0.251
Sex	0.171	0.079	2.15	0.032
AGE	0.052	0.012	4.23	0.000
Semester Hrs	0.031	0.014	2.23	0.026
HS % Rank	0.013	0.002	7.07	0.000
Ethnic Status[1]	-0.464	0.101	-4.58	0.000
Math Placement[2]	-0.393	0.129	-3.05	0.002
PROGRAM[3]	0.161	0.078	2.07	0.038

Without Program variable, $R = .325$, $R^2 = .105$, $F(5,841) = 19.824$; $P < .001$

With Program variable, $R = .332$, $R^2 = .110$, $F(6,840) = 17.285$; $P < .001$

[1]Dummy variable with values, 0 = not African American; 1 = African American

[2]Dummy variable with values, 0 = college level; 1 = remedial (M010 or 001)

[3]Dummy variable with values, 0 = comparison group; 1 = ARCHE program

Unadjusted Outcome Differences

There are few significant differences in the performance and persistence measures between the ARCHE and comparison groups. For the ARCHE group, performance in MATH 111 was significantly lower among the few students who enrolled in that level of math, compared to the similarly small group of 111 enrollees from the Fall 1993 comparison group. On the other hand, the Fall 1995 group outperformed their 1993 peers in the introductory Psychology course, B104. The lack of differences in this comparison suggests that despite some changes in the demographic characteristics of this at-risk group, performance and persistence rates have not changed much over the past four years.

Further Analyses

The presence of demographic changes may in fact be suppressing differences in performance and persistence. To test this hypothesis, regression analyses were conducted on both semester GPA (linear), and retention to the next semester (logistic). For the purpose of this analysis, the Fall 1995 and Fall 1996 ARCHE groups were combined to compare with the Fall 1993 group. The strongest predictors from among the background and enrollment characteristics variables were first entered into the model followed by the dummy variable indicating whether the student was in the ARCHE program or participant group.

Table 2 summarizes that results of the regression on Semester GPA, showing that the significant predictors together accounted for 10.5% of the variance in GPA. The program variable added significantly to the prediction of GPA, although contributing only a modest 0.5% to the total variance predicted. The unstandardized regression coefficient and standard error, suggests that membership in the program group added on average 0.16 grade-points—the 95% confidence interval for this program effect is 0.01 to 0.31 grade-points.

A similar result is obtained by treating the above predictors as covariates in a simple factorial general linear model analysis of the differences in Semester GPA by group membership. After controlling for the covariates, there exists a significant main effect for group membership ($F(1,840) = 5.168$, $p < .05$), with adjusted mean GPAs of 1.91 for the comparison group and 2.01 for the ARCHE group.

A logistic regression was conducted to assess whether the same hypothesis held true with regard to retention rates, that is, whether the demographic differences were suppressing the impact of group participation on retention. The analysis did not yield evidence to support this hypothesis—group membership did not add to the prediction of retention or withdrawal after controlling for the strongest predictors (GPA, Credit Hours, H.S. rank, and ethic status).

Conclusions

Although the ARCHE program does not represent an academic support intervention, there is a small but significant difference between ARCHE program participants and their peers from prior years in overall grade performance. There was no difference in persistence rates between groups. In effect, one could say that despite

changes in certain demographics that would normally be associated with declines in performance, students monitored through the ARCHE program fared as well as their earlier peers. Part of the reason for this may be that many of these students participated in the interventions examined in the next few sections of this report.

Student Mentoring/Advising Program (MAP)

The Undergraduate Education Center, the Office of Scholarships and Financial Aid, and the Student Mentor Program joined in an effort to develop a pilot program for Fall 1996 to serve students who score at or below the 10th grade reading level on the IUPUI placement test when they enter the institution. Six sections of Education X150, IUPUI's lowest reading level course, were selected for the pilot. Students who are enrolled in those sections are offered an opportunity to meet with a student mentor outside of class for 1½ hours each week. The student mentor (student MAP) introduces participants to campus support systems, provides mentoring support, takes students on tours of facilities on the campus, and serves as a guide and friend to students in the program throughout the semester. Two UEC counselors work directly with the program. Two incentives are offered to students to encourage participation. First, the Financial Aid office creates loan-free packages for all students who participate in the program if they meet established criteria. One criterion is that the students agree to enroll in 9 or fewer hours during the semester that they participate in the program. Secondly, all students who meet regularly with their Student MAP are eligible for scholarship book awards at the end of the semester, based on their GPA.

Baseline Group Comparisons

Two groups were identified for comparison purposes. The first group is composed of other UEC-P students enrolled in X150 during the Fall 1996 semester. In some ways, this represents students who could have but chose not to participate in the program. The second comparison group is composed of all Fall 1995 UEC-P students who placed into the X150 course.

Students in the MAP program appear similar to Fall 1996 non-participants with two exceptions. Following the

Table 3. Baseline Comparisons for the MAP Program

Background and Enrollment Characteristics

	Participants			*Non-Participants*			*Comparison Group*	
	Indicator	*n*[1]	*sig.*[2]	*Indicator*	*n*[1]	*sig.*[2]	*Indicator*	*n*[1]
Avg. Age	18.9	88		19.6	125		19.9	158
Percent Female	61%	88		61%	125		53%	158
Percent Afric. Amer.	42%	88		29%	125		31%	158
Avg. HS % Class Rank	36.8	88		30.2	125		34.2	158
Apply for Fin Aid	76%	88	**	58%	125		69%	158
Avg Pct Need Met	68.7	67		42.1	73	*	41.1	108
Placed into Rem Math	88%	88		91%	124	***[3]	93%	155
Placed into Rem Writing	74%	87		58%	121	**	89%	157
Placed into Rem Reading	100%	88		100%	122		98%	155
Avg. Semester Hours	11.4	88	**	10.3	125	*	10.6	158
Pct in ARCHE	92%	88		90%	125		86%	158
Performance and Persistence - Unadjusted								
Avg GPA	2.05	81		1.89	122	*	1.69	140
ENG W001	2.35	51		1.96	51		2.13	65
EDUC X150	2.08	70		2.30	110		[4]	
EDUC X151	2.30	41		1.93	53		[4]	
MATH 001	1.79	43		1.60	75		1.78	63
Retn to next sem	76%	88		78%	125		68%	158

[1]Valid n (excluding missing values) upon which indicator is based.

[2]Statistical significance relates to the difference between the participant and non-participant groups.

[2]See Appendix 1 for details on the statistical tests used to assess group differences.

[3]The difference between groups relates more to the percent of students placing into M010: 34% of comparison group compared to 11% of participants and 6% of non-participants.

[4]Only grades of Satisfactory and Unsatisfactory were conferred through the Fall 1995 semester

*p<.05; **p<.01; ***p<.001

relationship of this program with the financial aid process, MAP students are far more likely to have applied to and received financial aid. They also enroll in slightly more credit hours on average. The financial aid difference disappears when compared to the more inclusive Fall 1995 comparison group. However, the MAP group has a larger proportion of their financial need met (as part of the program) and also appears to average slightly higher levels of placement into non-remedial math (including 111) and writing courses (although the vast majority of all these students are placed into remedial sections in all three placement areas). Table 3 summarizes these comparisons, also showing that the vast majority of all groups considered are part of the ARCHE tracking system. And, although not statistically significant, the MAP program includes a notably higher proportion of African American students

Unadjusted Outcome Differences

Table 3 also shows one notable difference in outcomes between MAP students and the Fall 1995 comparison group—a significantly higher semester GPA. Although this GPA is higher for the MAP group compared to Fall 1996 non-participants, this difference is not statistically significant. It is also interesting to note that the difference in GPA between the entire Fall 1996 group (MAP participants and non-participants, combined) is marginally significantly higher than for the Fall 1995 group ($F(1,341) = 3.823$, $p=.051$).

Further Analyses

To further explore the impact of the MAP program on student performance, the same statistical techniques of linear regression and analysis of covariance for semester GPA, and logistic regression for retention, were performed. These analyses were conducted with the Fall 1996 groups, participants and non-participants. High school percentile rank was the only significant predictor of semester GPA, and course load and semester GPA were significantly associated with retention. However, program participation did not add to the prediction of either performance or persistence.

Finally, grades and retention rates were compared among the African American program participants and non-participants among the Fall 1996 cohort. The average grades were higher among program participants (1.77 vs. 1.59) and the retention rate lower (70% vs. 78%), but neither of these differences was statistically significant.

Conclusions

With the MAP program established, students placing into Education X150 appear to do better with regard to their overall semester grades compared to their counterparts from the previous year. The very early view we have of retention among these groups (i.e., one semester), shows no program impact.

Learning Communities

First-year experience courses have been in place for a number of years, but in Fall 1995 the School of Liberal Arts and the Undergraduate Education Center altered the existing program significantly. A model was developed that linked a first-year-experience course with an entry-level discipline course. The new model was presented to students as a **Learning Community**, with both sections taught by the same faculty member. In addition, an instructional team was added to provide even greater support to entering students. Each instructional team was composed of five members including the faculty member, an academic advisor, a librarian, a student mentor, and a technical support staff member. The model expanded in Fall 1996 with the Schools of Science and Engineering and Technology joining the program by offering their own specific model of the first-year-experience course.

Baseline Group Comparisons

Students participating in the Learning Communities program were compared with other students enrolled in the courses to which first-year experience courses were "linked," but were not enrolled in the first-year experience course. Table 4 shows the comparison of Learning Community students with their comparative peers for each of the last three semesters, Fall 1995, Spring 1996, and Fall 1996. The differences in background and enrollment characteristics were generally small and differed from one semester to the next. In Fall 1995, participants included a higher percentage of African Americans, and slightly older students taking slightly fewer credit hours on average. The Spring 1996 groups differed only according to age, with the participants averaging nearly two years older than non-participants. For the Fall 1996 group, the participants included higher proportions of students with college level reading abilities and who placed into college level writing.

Unadjusted Outcome Differences

If the differences between background and enrollment characteristics are considered few, the differences in performance and persistence outcomes are even fewer. Fall 1995 participants averaged significantly lower grades and a significantly lower rate of retention to the next semester (although not to the next year). There were no significant differences in performance and persistence for the Spring 1996 groups. Fall 1996 participants generally averaged higher grades than non-participants, but these differences were not statistically significant. Fall 1996 participants did return for the Spring 1997 semester at significantly higher rates than did non-participants.

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Table 4. Baseline Comparisons for the **Learning Communities** Program

Background and Enrollment Characteristics

	Fall 1995				Spring 1996				Fall 1996			
	Participants		sig [2]	Non-Partic.	Participants		sig [2]	Non-Partic.	Participants		sig [2]	Non-Partic.
	Indicator	n [1]		Indicator	Indicator	n [1]		Indicator	Indicator	n [1]		Indicator
Avg. Age	21.5	133	*	20.5	924	23.5	95	**	21.6	262	19.9	309		20.0	1193
Percent Female	53%	133		54%	924	45%	95		49%	262	56%	309		55%	1193
Percent Afric. Amer.	23%	133	**	13%	924	14%	95		18%	262	14%	309		17%	1193
Avg. HS % Class Rank	35.3	103		38.6	813	35.1	75		35.6	204	38.1	270		38.7	1033
Apply for Fin Aid	60%	133		63%	924	54%	95		50%	262	65%	309		61%	1193
Avg Pct Need Met	33.6	80		36.5	580	39.4	51		36.0	131	40.7	200		41.3	723
Placed into Rem Math	90%	127		90%	912	94%	95		92%	261	91%	305		89%	1182
Placed into Rem Writing	61%	130		59%	900	39%	95		49%	260	30%	305	**	40%	1163
Placed into Rem Reading	31%	128		35%	904	20%	95		27%	260	26%	305	***	38%	1172
Avg. Semester Hours	9.7	133	***	10.8	924	10.0	95		9.9	262	11.7	309	***	10.7	1193
Performance and Persistence - Unadjusted															
Avg GPA	1.77	131	**	2.09	896	2.05	95		2.00	245	2.03	301		1.94	1137
ENG W001	2.01	26		2.35	336	2.27	28		2.07	65	2.27	58		2.17	331
ENG W131	2.14	17		2.23	237	1.90	51		1.92	79	2.23	138		2.10	341
EDUC X150	[4]			[4]		1.52	11		1.91	15	2.36	15		2.23	131
EDUC X151	[4]			[4]		1.90	3		2.18	153	2.41	59		2.07	651
EDUC X152	[4]			[4]		2.77	6		2.67	26	2.62	59		2.44	157
MATH M010	1.68	32		2.17	203	2.67	15		1.73	52	1.98	24		2.02	89
MATH 001	1.66	42	*	2.11	426	1.98	51		1.92	120	2.01	183		1.84	681
PSY B104	1.59	27	*	2.27	171	1.51	9		1.77	38	1.92	87		1.63	200
Retn to next sem	68%	133	*	77%	924	61%	95		56%	262	80%	309	*	74%	1193
Retn to next year	48%	133		54%	924	49%	95		42%	262	na [3]			na [3]	

[1] Valid n (excluding missing values) upon which indicator is based.

[2] See Appendix 1 for details on the statistical tests used to assess group differences.

[3] The one year retention rate for the Fall 1996 cohort cannot be determined until Fall 1997.

[4] Only grades of Satisfactory and Unsatisfactory were conferred through the Fall 1995 semester.

*p<.05; **p<.01; ***p<.001

Further Analyses

Since the Learning Communities program has changed significantly over the past three semesters, additional analyses were conducted focusing only the Fall 1996 cohort. Linear regression analysis established age, H.S. rank, and ethnic status as the significant predictors of semester GPA, accounting for just under 10% of the variation, combined. Participation status did not significantly contribute to predicting grades after controlling for these factors. With regard to predicting semester retention, the significant difference between Learning Community participants and non-participants disappears when controlling for the other predictors of retention, specifically, semester GPA, credit hours taken, percent of financial need met, and ethnic status[1].

Given the large and diverse composition of students participating in Learning Communities, final analyses focused on the impact of participation among two specific subgroups of students: student who placed in remedial reading and African American students. Among the students who placed into remedial reading, Learning Community participants averaged a slightly higher semester GPA (2.13 vs.1.91), but this difference was not significant ($F(1,497) = 2.055$, $p = .152$). Similarly, the participant group had a higher semester retention rate (85% vs. 77%), but again, this difference was not statistically significant (chi-square(1) = 2.173, $p = .140$). The same pattern held among African American students. Learning Community participants averaged higher grades (1.96 vs. 1.58, $F(1,236) = 3.841$, $p = .051$), and retention rates (84% vs. 78%, chi-square(1) = .751, $p = .386$), but neither difference was statistically significant.

More recent data on persistence shows that among the Fall 1995 Learning Communities cohort, 37 percent were enrolled for the Spring 1997 semester. Perhaps more significantly, 41 percent of the African American participants, and 53% of the male African American participants were enrolled for the spring 1997 semester. These data suggest that the program may have a disproportional positive impact for African American males, the group with the lowest levels of persistence at IUPUI. While the numbers are still very small, this retention rate is significantly higher compared not only to other African American males but to all other IUPUI undergraduates.

[1] Assessed using logistic regression on enrollment status in the following semester with block entry first of the predictor variables and then program participation status.

Conclusions

The Learning Communities program has changed enough over the past three semesters that comparisons are difficult. There are some signs that the Fall 1996 program has been the most successful: grades and persistence are slightly higher although the impact of persistence is attenuated when controlling for other factors.

While complete data are not available to conduct analyses, a review of registration dates suggests that the students in learning communities are among those who were admitted and registered relatively late in the registration cycle. This is important only because other reports have claimed lowered levels of academic achievement and persistence for "late-deciders" and others who come late to the registration process. Subsequent analyses will focus exclusively on students who have enrolled in Joining the Scholarly Community sections (COAS 200, Windows on Science, Tech 105, and other courses). Students in these sections have lower withdrawal rates than do comparable groups of students, and we need to determine whether more long-term effects accompany this increased persistence. Both quantitative and qualitative research is warranted.

Horizons Workshop

The Horizons Workshop was developed for students who have a cumulative GPA of 1.24 or below and less than 18 total GPA credits in their first semesters of enrollment. The sessions were designed to help students understand the reasons for attending the workshop, for their probationary status and for attainment of low GPAs. In addition, session leaders address topics including how GPAs are computed and what is necessary to meet UBC Retention Standards. Other topics are time management techniques; availability of university resources such as mentoring, tutoring, and counseling; and test-taking and study skills techniques with handouts supporting each topic.

Baseline Group Comparisons

This analysis evaluates the performance in the spring 1996 semester of students who were enrolled in the Horizons Workshops based on their Fall 1995 academic performance. The comparison group is composed of students who met the same eligibility requirements based on their Fall 1993 academic performance who then enrolled for the Spring 1994 semester.

It should be noted that changes in the academic dismissal policy impact the comparability of the two groups. A portion of the Fall 1993 students (those with 9 or more total GPA hours attempted) who performed so poorly would have been dismissed prior to the spring 1994 semester.

Table 5 summarizes the baseline differences between the Horizon and comparison groups. As noted in the ARCHE program analysis, the two biggest differences—Horizons students slightly younger on average and enrolled in more credit hours—follows the general trend for IUPUI undergraduates over the past four years. In addition to these differences, the Horizons group has a slightly lower rate of placement into remedial mathematics courses, 84% compared to 91% for the comparison group.

Unadjusted Outcome Differences

The Horizons and Comparison group had very similar and extremely low average Fall GPAs. And, although the Horizons group averaged a slightly lower spring semester GPA, this difference is not statistically significant. It should also be noted that a number of students in the Fall 1993 comparison group, presumably the poorest academic performers, were dismissed for academic reasons and not given a chance to go through such programs as Horizons in an attempt to improve their grades.

In perhaps the most striking program effect evident in this study, Horizons students are retained over a one year period at over twice the rate of the comparison group. As

Table 5. Baseline Comparisons for the **Horizons** Program

Background and Enrollment Characteristics	1995-96 Participants			1993-94 Comp. Group	
	Indicator	n[1]	sig.[2]	Indicator	n[1]
Avg. Age	19.5	150	**	21.4	119
Percent Female	48%	150		54%	119
Percent Afric. Amer.	23%	150		23%	119
Avg. HS % Class Rank	39.5	127		34.4	105
Pct in Prep Program	77%	150		84%	119
Pct Beginner	90%	150		86%	119
Placed into Rem Math	84%	146	*	91%	117
Placed into Rem Writing	53%	143		39%	110
Placed into Rem Reading	41%	143		50%	113
Avg. Semester Hours	11.1	150	***	9.8	119
Avg. Fall GPA	0.61	150		0.63	119
Performance and Persistence - Unadjusted					
Spring GPA	0.81	150		1.02	97
Retn to next sem	41%	150		32%	119
Retn to next year	35%	150	***	16%	119

[1]Valid n (excluding missing values) upon which indicator is based.

[2]See Appendix 1 for details on the statistical tests used to assess group differences.

*p<.05; **p<.01; ***p<.001

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noted above, this is partly because of the change in academic dismissal policy.

Table 6. Sub-group Differences in Grades and Retention among Horizon and Comparative students

Subgroup	Indicator	*Horizons*	*Comp. Grp*	*Sig.*
UEC-P	Percent of Students in Group	77%	84%	
	Average Spring GPA	0.83	0.86	
	One-year Retention Rate	35%	16%	**
Remedial Reading	Percent of Students in Group	41%	50%	
	Average Spring GPA	0.76	0.67	
	One-year Retention Rate	36%	20%	*
African Americans	Percent of Students in Group	23%	23%	
	Average Spring GPA	0.71	0.87	
	One-year Retention Rate	35%	15%	*

*p<.10; **p<.01

Note. Chi-square test for independence used for the percent of group and retention rate analyses of group differences; one-way ANOVA (F-test) used to test for differences in grades.

Further Analyses

The only measure that predicted spring semester grades was fall semester grades, and this relationship was fairly modest (Pearson correlation of 0.23, p<.01)[2]. As would be expected given the similarity of fall grades among the two groups, controlling for fall grades does not effect the impact of program participation on spring grades.

As shown in the baseline comparison, Horizons participants had a significantly and substantially higher retention rate than among the comparison group. Spring GPA was the only other significant predictor of retention with higher grades being associated with a greater likelihood of returning. Since the Horizons group averaged lower average grades than the comparison group (although not significantly so), controlling for spring grades only increases the effect size of program participation on retention, although by only a very small amount (by less than one-quarter of one percentage point).

A final analysis looked at the differences in spring grades and one-year retention rates among three subgroups among Horizons and the comparison group: Students in the UEC preparatory program, students who placed into remedial reading, and African American students.

As Table 6 shows, the lack of differences in grades and large difference in retention rates holds up among all subgroups. The significance level for the retention rate difference does become weaker as a result of the decreasing group sizes. It is also interesting to note that the lower average grades for the Horizons group apparent in the overall summary table changes for two of the subgroups. The gap narrows to almost identical averages among the UEC-P subgroups, and the direction of the non-significant effect reverses for students who placed into remedial reading.

[2] The ability to statistically predict spring grades was dampened by the lack of variation in this measure. Two out of every five students in the Horizons and comparison groups had a 0.00 GPA.

Conclusions

The Horizons workshops appear to have a very strong impact on the retention of these poorly performing students. However, it does not appear to affect their academic performance, at least in the short time span considered in this study. It will be important to continue tracking these students to see if they can bring their grades up far enough to be able to continue their studies.

Peer Mentoring

The Student Mentor Program operates with groups of students working together with a student mentor to better understand difficult course material. This collaboration provides an enriching environment where students strengthen academic skills and build community. Student mentors are trained to guide the students through the learning process, not to provide traditional tutoring. The Student Mentor Program provides mentoring in a variety of courses that have been traditionally difficult for students and often have a high failure rate. Mentoring is provided in over 50 courses, and there are 140 students serving as mentors in the 1996-97academic year.

Baseline Group Comparisons

Students were classified as taking part in the Student Mentoring Program if they attended at least three mentoring sessions in association with a single course. The comparison group includes all students enrolled in mentoring courses that did not take advantage of the mentoring sessions at least three times. It should also be noted that students could be enrolled in more than one

mentoring course. As long as they attended three sessions for one of these courses, they were considered to have taken part in the program.

Table 7 summarizes the differences between program participants and non-participants according to the various background, enrollment, performance, and persistence indicators available for this group. Since the student mentoring program is open to all students enrolled in these very popular courses, the pool of eligible participants is both large and diverse, covering students in all schools, at all class levels, and of varying ability levels.

As Table 7 shows, the self-selected participants differ from non-participant peers along several critical dimensions: on average, they are older, have higher starting GPAs, are less likely to be freshmen, and less likely to be in the UEC-preparatory program. In other words, many relatively better prepared students take advantage of the program. There are also differences for both semesters in the participant group being more likely to have applied for financial aid and to have had a larger proportion of their financial need met. Finally, for the Fall 1995 cohort, participants included proportionately more females and fewer minorities, but neither of these differences held for the spring semester.

Unadjusted Outcome Differences

Given the initial differences between program participants and non-participants, it is not surprising to see across the board differences in the performance and persistence indicators. Participants in the Student Mentoring Program had significantly higher semester grades overall, as well as in their mentoring courses. They were also more likely to complete their mentoring courses, to re-enroll in the next semester, and a year later.

Further Analyses

Following the strategy used in earlier analysis, linear regression analysis was used to determine which background and enrollment indicators contributed to the prediction of semester GPA so that these factors could be controlled in evaluating program impact. As one might expect, the single best predictor of semester GPA was prior GPA, which alone accounted for just under one-quarter of the variation in semester GPA. Adding high

Table 7. Baseline Comparisons for the **Peer Mentoring** Program

Background and Enrollment Characteristics

	Fall 1995					Spring 1996				
	Participants			Non-Partic.		Participants			Non-Partic.	
	Indicator	n[1]	sig.[2]	Indicator	n[1]	Indicator	n[1]	sig.[2]	Indicator	n[1]
Average Age	26.4	616	***	23.9	7204	26.6	497	***	24.0	6499
Percent Female	65%	616	***	56%	7204	60%	497		56%	6499
Percent Minority[3]	19%	616	**	15%	7204	18%	497		16%	6499
Avg. HS % Class Rank	54.4	447		52.6	5727	55.1	348		52.5	5086
Apply for Fin Aid	65%	616	***	57%	7204	62%	497	**	56%	6499
Avg Pct Need Met	45.3	399	**	40.6	4088	46.9	309	*	42%	3635
Placed into Rem Math[4]	68%	131		74%	1773	88%	60		83%	494
Placed into Rem Writing[4]	48%	131		47%	1752	34%	58		51%	482
Placed into Rem Reading[4]	28%	129		26%	1756	17%	58		26%	482
Pct in Prep Program	25%	616	***	30%	7204	30%	497		29%	6499
Percent Freshmen	47%	616	***	55%	7204	44%	497	*	50%	6499
Avg. Prior GPA	2.80	419	***	2.52	4682	2.84	407	***	2.55	5532
Avg. Semester Hours	10.9	616	**	10.5	7204	10.9	497	***	10.4	6499
Performance and Persistence - Unadjusted										
Avg Semester GPA	2.83	602	***	2.37	6706	2.79	490	***	2.30	6017
Avg. Mentor Course GPA	2.74	562	***	2.26	5939	2.64	457	***	2.13	5388
Pct Complete Mtr Crse	83%	616	***	77%	7204	87%	497	***	78%	6499
Retn to next sem	92%	616	***	77%	7204	84%	497	***	70%	6499
Retn to next year	78%	616	***	63%	7204	74%	497	***	61%	6499

[1]Valid n (excluding missing values) upon which indicator is based.

[2]See Appendix 1 for details on the statistical tests used to assess group differences.

[3]No significant difference exists for African American students but as there is a difference for minorities as a whole, student from all minority ethnic backgrounds were grouped together for this table.

[4]Placements evaluated for beginning freshmen only.

*p<.05; **p<.01; ***p<.001

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school rank, English placement, math placement, minority status (minority vs. non-minority), and class level (freshman vs. all other), brings to 27% the total variation accounted for in semester GPA. After controlling for these factors, program participation still contributes significantly to the predication of semester GPA, adding another 0.5% to the prediction. Entering the predictor variables as covariates in a simple factorial analysis of variance shows that the group difference in semester GPA changes to 2.58 for participants vs. 2.26 for non-participants for the fall and spring semester groups, combined. The program affect on GPA, when controlling for differences in group profile, is approximately one-third of a letter grade, or 0.33 grade-points.

Unfortunately, relying on prior GPA as a predictor restricts the analysis to students who have some prior college experience. To circumvent this limitation, subgroup analysis was used, focusing specifically on first-time college students (beginner freshmen) and, within that group, students who placed into remedial reading, and students in the UEC preparatory program. For these analyses, the Fall 1995 and Spring 1996 groups were merged to provide more power through larger sample sizes. Tables 8 through 10 summarize these analyses.

Table 8. Peer Mentoring Comparisons Among First-Time College Students

Background and Enrollment Characteristics

	Participants			Non-Partic.	
	Indicator	n[1]	sig.[2]	Indicator	n[1]
Average Age	22.0	194	***	22.1	2302
Percent Female	57%	194		53%	2302
Percent Minority[3]	14%	194		16%	2302
Avg. HS % Class Rank	53.5	164	*	48.8	2008
Avg Pct Need Met	35.9	137	***	48.7	1355
Placed into Rem Math	74%	191		76%	2267
Placed into Rem Writing	44%	189		48%	2234
Placed into Rem Reading	25%	187		27%	2238
Pct in Prep Program	65%	194		63%	2302
Avg. Semester Hours	11.7	194	***	10.8	2302
Performance and Persistence - Unadjusted					
Avg Semester GPA	2.76	193	***	2.17	2209
Avg. Mentor Course GPA	2.78	190	***	2.17	2108
Retn to next year	71%	194	***	55%	2302

[1]Valid n (excluding missing values) upon which indicator is based.

[2]See Appendix 1 for details on the statistical tests used to assess group differences.

*p<.05; **p<.01; ***p<.001

Table 8 shows that when looking at only first-time freshmen, many of the demographic and enrollment differences seen in the larger group are diminished. When controlling for the remaining differences, the difference in spring GPA reduces from 0.50 grade points to 0.50 grade points, still a highly significant difference. The 16 percentage point difference in one year retention rate is reduced by only 2 to a 14 percent gap, which is also still highly significant.

This same pattern holds true when looking at first-time students in the UEC preparatory program (Table 9), and when looking only at first-time students who placed into remedial reading (Table 10). In both cases the differences between participants and non-participants in background and enrollment characteristics are very small and mostly unrelated to factors which predict performance and persistence. At the same time, the differences in outcomes are as large, or larger than for the overall group. This is especially noticeable among students who place into remedial reading, where program participants achieve semester GPAs nearly a grade higher on average than students who do not participate in the program.

Table 9. Peer Mentoring Comparisons Among First-Time UEC Preparatory College Students

Background and Enrollment Characteristics

	Participants			Non-Partic.	
	Indicator	n[1]	sig.[2]	Indicator	n[1]
Average Age	23.6	126	***	20.7	1460
Percent Female	53%	126		50%	1460
Percent Minority	19%	126		19%	1460
Avg. HS % Class Rank	41.3	102	*	36.4	1229
Avg Pct Need Met	41.2	90		35.3	837
Placed into Rem Math	95%	126		90%	1445
Placed into Rem Writing	54%	123		58%	1434
Placed into Rem Reading	35%	124		33%	1438
Avg. Semester Hours	10.8	126	*	10.2	1460
Performance and Persistence - Unadjusted					
Avg Semester GPA	2.63	125	***	1.92	1391
Avg. Mentor Course GPA	2.67	122	***	1.91	1311
Retn to next year	64%	126	***	38%	2302

[1]Valid n (excluding missing values) upon which indicator is based.

[2]See Appendix 1 for details on the statistical tests used to assess group differences.

*p<.05; **p<.01; ***p<.001

Table 10. Peer Mentoring Comparisons Among First-Time Students Who Placed into Remedial Reading

Background and Enrollment Characteristics

	Participants			Non-Partic.	
	Indicator	*n*[1]	*sig.*[2]	*Indicator*	*n*[1]
Average Age	19.7	*46*		19.4	*596*
Percent Female	44%	*46*		55%	*596*
Percent Minority	17%	*46*		25%	*596*
Avg. HS % Class Rank	45.2	*42*	*	42.8	*516*
Avg Pct Need Met	48.3	*33*		38.1	*374*
Placed into Rem Math	87%	*46*		84%	*595*
Placed into Rem Writing	67%	*46*		72%	*583*
Pct in Prep Program	94%	*46*		79%	*596*
Avg. Semester Hours	12.0	*46*	**	10.8	*596*
Performance and Persistence - Unadjusted					
Avg Semester GPA	2.66	*46*	***	1.85	*563*
Avg. Mentor Course GPA	2.65	*45*	***	1.85	*522*
Retn to next year	70%	*46*	***	53%	*596*

[1]Valid n (excluding missing values) upon which indicator is based.

[2]See Appendix 1 for details on the statistical tests used to assess group differences.

*p<.05; **p<.01; ***p<.001

Since so many students participate in the Student Mentoring program, it was also possible to look at difference in responses to items on the Continuing Student Satisfaction and Priorities Survey conducted in Spring 1996. The survey sample included 174 students who participated in the student mentoring program in either or both the Fall 1995 and Spring 1996 semester as well as 391 from the non-participant groups. Among the 57 satisfaction items, there were statistically significant group differences for only two items, but these were telling differences. Table 11 summarizes the few attitudinal items from among the 100 such items on the survey, for which there were statistically significant differences between the program participants and non-participants. Although one might expect there to be a handful of significant differences among so many items just by chance, it is clear from the nature of these items, that the program has an impact on more than just students grades and likelihood of persisting.

The student satisfaction survey also provides a chance to examine other possible differences in the demographics of participants and non-participants. For example, while a slightly lower percentage of program participants work for pay while attending school (71%, compared to 80% of non-participants), those who do work average roughly the same number of hours per week. Slightly larger proportions of program participants are married (32% compared to 23%), live with a spouse or partner (43% compared to 32%), and have children at home (34%, compared to 27%). There was no difference between the

Table 11. Differences Between Mentoring Program Participants and Non-Participants in Student Satisfaction Survey Responses

	Participants		Non-Participants		
Item	*Mean*	*N*	*Mean*	*N*	sig.
Social experiences[1]	0.41	*166*	0.14	*368*	**
Tutoring services[1]	0.84	*155*	0.38	*266*	***
Worked/Studied with students outside class[2]	2.19	*172*	1.66	*385*	***
Have class w/community service component[2]	0.51	*172*	0.34	*385*	*
I am often bored in class[3]	-0.53	*166*	-0.23	*381*	**

[1]Responses provided on a 5-point scale where: -2 = very dissatisfied; -1 = dissatisfied; 0 = neutral; +1 = satisfied,and +2 = very satisfied

[2]Responses provided on a 4-point scale where: 0 = never; 1 = one or two times; 2 = three or four times; and 3 = five or more times

[1]Responses provided on a 5-point scale where: -2 = strongly disagree; -1 = disagree; 0 = neutral; +1 = agree; and +2 = strongly agree

*p<.05; **p<.01; ***p<.001, all tests based on one-way analysis of variance (F-Test).

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groups in the percent who represent first-generation college students from among their families (54% of both groups).

Conclusions

The Student Mentoring Program has a significant impact on students who participate, both in terms of enhanced grades and higher retention rates. When looking at the entire student population for whom this program is available, it appears that many of the relatively better prepared students take advantage of this opportunity. However, even when controlling for differences in students' level of preparation, there remains a large effect of one-third of a full letter grade on average, and between a 12 percent higher one-year retention rate. Furthermore, the program appears to have even greater benefit for first-time students, including the least well prepared among them as indicated by placement into remedial reading. These analyses do not consider the motivational factors that may account for why certain students choose to participate and others do not. But it is clear that this program offers benefits to students who are at different points in their undergraduate career. It also appears that students who participate in this program feel better about the social aspects of their college experience as a result of working with other students outside class.

Discussion

The academic support programs considered in this study provide a range of services to a diverse array of students. It is clear that some of these programs have a significant impact on students on average while for others the average impact is less clear.

It is important to note several limitations of this or any evaluative study that examines average group differences, based on a limited set of input and outcome measures. While every attempt was made to identify the most important baseline demographic and enrollment characteristics, our efforts are clearly limited to the kinds of data available from student records. Furthermore, changes in group averages may gloss over other types of changes in group characteristics, such as amount of variation and distribution shape.

The present study was also limited by time spans in two important ways. First, many of these programs are relatively new and program administrators are still discovering which procedures and practices work well and which do not. Second, the "follow-up" period for assessing performance and persistence is relatively short. The impact of some of these programs on students, especially those geared toward high-risk students, may require more time to take effect.

Since this study assesses impact with regard to but a limited set of student outcomes, it may not capture more important factors of student development. It also does not address at all the impact of these programs on other individuals, such as students' families, employers, and campus faculty and staff. Perhaps the best example of this last limitation is in relation to the Learning Communities program. This program's development and administration has placed a large number of senior faculty members in closer contact with undergraduate students, counselors, librarians, and technology support staff. The kinds of benefits that may accrue from these relationships are far beyond the ability of a few simple student outcome measures to capture. Furthermore, these benefits may take time to develop their full impact. It will be interesting to monitor changes in perceptions of student welfare through the existing campus surveys of students, faculty and staff as these support programs develop further.

These programs vary a great deal in their organization and scope. The ARCHE program is primarily a means for tracking students, to provide for ongoing analyses of the students most at risk at IUPUI. The MAP project "ups the ante" to some degree by linking involvement with student financial aid. The Student Financial Aid Office joined in this partnership with the goal of providing certain funds tied to a lowered course load for students at risk with increased services. This was based upon the assumption that academic achievement and persistence are unduly impacted in a negative way by students registering for too many hours and subsequently not having the time to become involved enough with their educational pursuits. Despite the offer of NO indebtedness, only three of the 88 students invited into the program in Fall 1996 completed the semester. Students made the choice to register for more hours and, in most cases, to increase their level of indebtedness. It will be important for the campus to investigate other means of limiting course enrollments or to link academic experience with work.

The Horizons program was developed as a "compensating" mechanism when the campus changed its retention guidelines. Students who would have been dismissed were permitted to continue to enroll, with the workshop and a counseling appointment deemed a minimal "intervention" with these students. It is perhaps surprising that a two-hour workshop would have any impact on students. Clearly, further research is needed.

The student mentoring programs, here seen to have the most significant and lasting impact, are centered on student learning. The mentoring sessions are designed to build upon the course material, to provide students with the means to become more involved with their learning and to begin to learn in collaborative contexts. It could be argued that the program's effectiveness is a function of its connection with the classroom. IUPUI students come to campus to go to class. And, with this program recording some 1,500 student visits a week, students are making use

of this resource. It should be noted that the mentoring program has a rich body of data that will be helpful as qualitative research is developed, primarily consisting of journal entries from student mentors. From the beginning of the program, students in mentor roles have been asked to keep journals as a means of reflecting upon and learning from their involvement. Given the increasing attention to reflection as a part of the learning process, these data will be especially meaningful.

The Learning Communities effort, centering on the Joining the Scholarly Community course and its various iterations, is the most extensive program of academic support. It provides an instructional team (faculty, academic advisor, and peer mentor attending all sessions, joined by a librarian and technical support person in planning the course and in offering content to some course meetings). It is intentionally linked to the student mentoring program in that a key role of peer mentor is to introduce students to mentoring sessions in other classes. Faculty, staff, and students involved with this program are conducting extensive research on its effectiveness, both in the short-term and in the long-run.

It is also important to note that the primary contact of students with the campus is in the classroom. Program reviews and other assessment measures have been developed at the departmental and school levels to assess the effectiveness of these curricular efforts. Such data are particularly important in mathematics, writing, and reading, the foundational areas of study for IUPUI's entering students. As the campus continues its efforts to serve entering students and to increase student academic achievement and persistence, assessment, including the issuing of research briefs on a regular basis, will play an increasingly important role. Both quantitative and qualitative research efforts will be developed, building upon the work reported here.

Finally, it should be noted that the purpose of this study was, in effect, three-fold: to evaluate the short-term impact of the programs being incorporated into University College; to establish a baseline of these effects as a way to monitor program effectiveness in the future; and to promote the use of systematic evaluation in formulating decisions about program development and support. Ongoing efforts in the Undergraduate Education Center to track student participation in these programs made this study possible. It is important to maintain such efforts so that we may be more deliberate in our efforts to assess the effectiveness of all campus programs.

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Appendix 1. Variables used in Comparing Program and Comparison Groups

Indicator	Statistical Test for Assessing Group Differences	ARCHE	Horizons	MAP	Learn Comm	Mentoring
Background and Enrollment Characteristics						
Average Age	One-way ANOVA (F-Test) on age to nearest year	X	X	X	X	X
Percent Female	Chi-square test for independence with gender (male/female)	X	X	X	X	X
Percent African American	Chi-square test for independence with ethnic status as African American/all others	X	X	X	X	
Percent Minority	Chi-square test for independence with ethnic status as minority/all others					X
Average High School Class Rank	One-way ANOVA (F-Test) on percentile rank in high school class	X	X	X	X	X
Apply for Financial Aid	Chi-square test for independence with categories, application on file/no application on file			X	X	X
Average Percent of Need Met	One-way ANOVA (F-Test) on percent of financial aid need that was met among those who had a financial aid application			X	X	X
Percent in Prep Program	Chi-square test for independence with categories UEC-P, UEC, or All Others.		X			X
Percent Beginner	Chi-square test for independence with categories Beginner, Transfer		X			
Percent Freshmen	Chi-square test for independence with all class level categories (freshman, sophomore, junior, senior)					X
Placed into Remedial Math (M010 or 001)	Chi-square test for independence of four placement categories: M010, 001, 111, or College Level	X	X	X	X	X
Placed into Remedial Writing (E010 or W001)	Chi-square test for independence of three placement categories: E010, W001, W131. Placement into ESL excluded	X	X	X	X	X
Placed into Remedial Reading (Gateway, X150, or X152)	Chi-square test for independence of four placement categories: Gateway, X150, X152, or College Level.	X	X	X	X	X
Average Semester Hours	One-way ANOVA (F-Test) on student course credit load as of census date.	X	X	X	X	X
Average Prior GPA	One-way ANOVA (F-Test) on grade-point average prior to "treatment" semester		X			X
Performance and Persistence Indicators						
Average Semester GPA	One-way ANOVA (F-Test) on grade-point average for the "treatment" semester	X	X	X	X	X
Grades in Courses:	One-way ANOVA on average grade-points (e.g., A=4, B=3, etc.) among students who completed the course.					
ENG W001		X		X	X	
ENG W131		X			X	
EDUC X150				X	X	
EDUC X151				X	X	
EDUC X152					X	
MATH M010		X			X	
MATH 001		X		X	X	
MATH 111		X				
PSY B104		X			X	
Percent Completing Mentoring Course	Chi-square test for independence on categories of 100%, 75%, 50%, and 25%, reflecting the percent of mentoring courses completed by each student who took up to four such courses in a semester.					X
Retention to Next Semester	Chi-square test for independence on students who returned versus did not return for the subsequent semester	X	X	X	X	X
Retention to Next Year	Chi-square test for independence on students who returned versus did not return for two semesters later (Fall to Fall or Spring to Spring)	X	X		X	X